

REMARKS/ARGUMENTS

Claims 1-8 are now pending the application. Entry of this amendment and reconsideration of the application are requested.

It is respectfully submitted that the revisions to claims 1-4 and 6-8 above place the application in condition for allowance. No significant new issues should be raised by the revisions noted.

In the final Office Action, claims 1-8 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,639,498 to Leung. Applicants respectfully traverse the rejection.

(1) The features of the present invention

Conventional techniques may be used to reduce the number of signals necessary for location registration of mobile nodes. However, the document cited in the Office Action only discloses paging the mobile node when the mobile router is in an active state. In conventional techniques, when a mobile router is in an active state, the mobile router starts to perform handover processing and does not perform the location registration on behalf of the mobile nodes any longer. That is to say, when a mobile router moves from one registration area to another while the mobile router is in an active state, the location of the mobile node cannot be specified by paging.

According to an aspect of the present invention, when the mobile router is in an active state, the routing address information used for handover processing is used for paging. The location registration area information is managed in a location manager (LM), and the routing address information is managed in a

routing manager (RM). When there is a paging request for a mobile node, and if the mobile router is in an active state, the LM obtains the routing address information of the mobile router from the RM to perform paging to the mobile node based on the routing address information. The reason for this is that the mobile router and the mobile nodes move together, as they belong to the same base station. Such paging by use of the routing address makes the geographical scope smaller than is the case in the normal paging by use of the location registration area, thereby reducing the wireless resources required for paging.

(2) The cited Leung reference

In contrast to the present claimed invention, Leung describes, in its Description of the Related Art, a process to improve the implementation of Mobile IP, such as that described in RFC 2002, section 4.5, for mobile routers. The mobile network relating to a mobile router is specified such that a certain table is updated, thereby eliminating the need for pursuing the mobile router and its related nodes. When the mobile router moves to another geographical location, the mobile router creates a Registration Request so as to register with a Home Agent.

(3) Distinctions between the claimed invention and Leung

A significant difference between the present invention and the cited reference is the difference in the network system in which each of the systems is used. This difference is significant, even though the present invention and Leung utilize common terms such as mobile router, mobile node, etc.

Leung discloses that the mobile router or mobile node has two types of states, namely active (in communication) and dormant (standby/sleep mode). Accordingly, paging does not occur for switching the state of the mobile node from dormant to active in any of the cited documents. Specifically, Leung is related to mobile IP, so the mobile router and the mobile node are always "ON", meaning they are always active, because battery consumption is not considered at all. In contrast, the dormant state is employed in the present claimed invention in order to suppress the battery consumption of the mobile node and the mobile router.

(i) With respect to claims 1 and 4, the final Office Action states that Leung discloses a unit for retaining a flag indicating whether the mobile router is active or not [in the registration REQUEST, the D bit informs the home agent which entity is performing the decapsulation, col. 12, lines 17-18; interpreted as whether a mobile router is active or not].

However, in the claimed invention the flag is retained in a table of the LM to indicate "whether the mobile router is in an active state (in communication) or in a dormant state (standby/sleep mode)". Such a flag is not disclosed in the cited document. In the Office Action it is also asserted that D bit 548 described in Leung corresponds to the flag of the present invention. However, D bit 548 is included in the registration request packet 502 so that 1 is set for the co-located care-of address and 0 is set for the care-of address of a Foreign Agent. Therefore, the flag of the present invention has a different purpose than that of D bit 548 of the Leung reference.

In addition, the flag of the present invention is used for confirming whether the mobile router is in communication or not, when paging is performed. In contrast, the D bit of the Leung reference informs the home agent of which entity is performing decapsulation. (Column 12, lines 18-19.) Since Leung describes a broader definition of “which entity”, it is not clear what the entity stands for. For example, Home Agent, Foreign Agent, mobile router, and mobile node may be the entities in question.

(ii) With respect to claims 1, 3, 4 and 6, the Office Action asserts that Leung discloses a unit for performing paging to the mobile node using the obtained routing address information as a result of the inquiry [the type field indicates the registration REPLY as a result of the registration REQUEST, col. 12, lines 9-10; interpreted as a reply (result) to the inquiry].

In the Office Action it is asserted that the claimed “performing paging to the mobile node using the obtained routing address information” is similar to “the type field identifies the registration REPLY as a result of the registration REQUEST” described in Leung. However, since a type field 542 as disclosed in Leung identifies the message as either a Registration Request or a Registration Reply (Column 12, lines 9-10.), the Registration Request or the Registration Reply are identified depending on the packet. Accordingly, the result of the system is different depending on the Registration Request or the Registration Reply. Even if the type field indicates the Registration Reply as a result of the Registration Request, as the Examiner stated, the type field itself does not concretely indicate what is done in what way. Decapsulation or the like may be

performed with reference to the type field. However, the interpretation set forth in the Office Action appears to incorrectly assert that Leung's "the type field identifies the registration REPLY as a result of the registration REQUEST" is similar to or corresponds to the claimed "performing paging to the mobile node using the obtained routing address information".

(iii) Regarding claims 2 and 5, the Office Action states that a unit for setting the first flag to a value indicating an active state in response to a first signal sent from the mobile node and indicating start of communication [in the registration REQUEST, the S bit is set to create a binding for a care-of-address, col. 12, lines 10-13; interpreted as an active state].

However, the S bit 544 of the Leung reference is included in the registration request packet. Similarly to the D bit 548, the mobile node sets an S bit 544 to 1 to ask that its home agent create or delete a binding for the specified care-of address without affecting any other existing bindings. (Column 12, lines 10-13.) However, Figure 5 of Leung shows that 544 is indicated as an Extension. Since the Extension 544 also appears to include 546, 548, 550, 552, 554, and 556, the reference does not clearly describe where 1 is set.

(iv) With respect to claims 4, 7 and 8, the Location Manager (LM) and the Routing Manager (RM) recited in the present invention have some common features with those of the "foreign agent" and "home agent" described in the Leung reference, relating to the location information of mobile nodes that is stored. However, as described above, the network systems to be applied are different between the present invention and Leung. In the present invention,

when there is a paging request for a mobile node in a dormant state, and if a mobile router is in an active state, the LM obtains the routing address information of the mobile router from the RM, and performs paging to the mobile node to activate it (i.e., to turn it into an active state) based on the routing address information. In contrast, in the Leung reference, neither the foreign agent nor the home agent performs paging to a mobile node, because all of the mobile nodes are always in an active state.

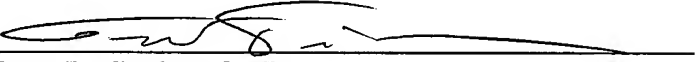
Applicants respectfully submit that upon entry of the present amendment, and in view of the foregoing remarks, the application should be in condition for allowance. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

As provided for above, this paper should be considered as a Petition for an Extension of Time sufficient to effect a timely response. Please charge any

deficiency in fees, or credit any overpayment of fees, to Deposit Account No. 05-1323 (Docket No. 010755.53179US).

Respectfully submitted,
CROWELL & MORING LLP

Dated: July 2, 2008

By 
Robert L. Grabarek, Jr.
Reg. No. 40,625
Tel.: (949) 263-8400 (Pacific Coast)

Paolo M. Trevisan
Reg. No. 45,164
Tel.: (202) 624-2500

Intellectual Property Group
P.O. Box 14300
Washington, D.C. 20044-4300